IMPERIAL [illegible] TICAL
18 OCT 1934
IN[illegible]

ADVISORY DEPARTMENT
OF
THE IMPERIAL COLLEGE OF
TROPICAL AGRICULTURE.

REPORT

ON THE

AGRICULTURAL DEPARTMENT, ST. VINCENT,

FOR THE YEAR

1933.

TRINIDAD.
ISSUED BY THE COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

1934.

[Price Sixpence.]

REPORTS

ON THE

BOTANIC STATION, ECONOMIC PLOTS, AND AGRICULTURAL EDUCATION, ST. VINCENT.

Annual Reports on certain Economic Experiments conducted in connexion with the Botanic Station, 1900-2.

Annual Reports on the Botanic Station for the years 1901 and 1902.

Annual Reports on the Botanic Station, Economic Experiments, and Agricultural Education for the years 1902-3 to 1918-33.

ADVISORY DEPARTMENT
OF
THE IMPERIAL COLLEGE OF
TROPICAL AGRICULTURE.

REPORT
ON THE
AGRICULTURAL DEPARTMENT, ST. VINCENT,
FOR THE YEAR
1933.

TRINIDAD.
ISSUED BY THE COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

1934.

[Price Sixpence.]

PRINTED BY THE GOVERNMENT PRINTER, AT THE GOVERNMENT PRINTING OFFICE,
KINGSTOWN, ST. VINCENT.

1934.

LETTER OF TRANSMITTAL.

THE IMPERIAL COLLEGE OF TROPICAL AGRICULTURE,
AGRICULTURAL ADVISORY DEPARTMENT,
TRINIDAD,
7th August, 1934.

C. A. 900/34.

Sir,—I have the honour to submit herewith the Annual Report of the Agricultural Department, St. Vincent, for the year ended December 31st 1933.

2. The values of products exported from the island in 1932 and 1933 were £95,048 and £112,265 respectively, showing an increase of £17,217, while the value of imported goods during the same period only increased by £600.

3. The quantity of arrowroot starch exported during 1933 amounted to 4,589,435 lbs., (valued at £55,510) this being around 800,000 lbs. more than in 1932. Sales have not entirely kept pace with the recent considerable increase in production and a larger carry over from year to year has resulted. The position is not yet acute but possible methods of controlling production have recently received consideration. The exports to different countries for the last six years are given in Table I: the quantities shipped to the United States and the United Kingdom during 1933 both showed increases of around 400,000 lbs. as compared with 1932 exports. Two field experiments to determine the optimum planting distance and the value of mulching were carried out by the Scientific Officer of the Arrowroot Association in co-operation with the Agricultural Department and very useful results have been obtained.

4. The cotton acreage planted in 1932 was only 669 acres and this resulted in a very small crop being reaped in 1933: the restriction of acreage was largely due to the existence of large unsold stocks of lint and unremunerative prices. The market conditions improved considerably during the year, and between May 1933 and May 1934 unsold stocks were diminished from 1,700 bales to 350 bales. The thanks of the Government are again due to the Empire Cotton Growing Corporation for the work undertaken by the Cotton Research Officer in maintaining the high quality of the island's cotton crop.

5. The production of coconuts and copra during the year was very little less than in 1932, but owing to steadily decreasing prices the value fell by nearly £3,000.

6. Three Rivers Estate which was purchased by Government for land settlement purposes in 1932, was marked out into 143 allotments for cultivation and 35 house lots. All the house lots and about half the allotments were taken up by peasants during the year and the progress made in cultivation is very satisfactory. Proposals have been submitted regarding the disposal of the balance of the land available.

7. Only four Agricultural Credit Societies were registered at the end of 1933: financial assistance from the Government is urgently required if Credit Societies are to function satisfactorily.

8. The report of the Government Fruit and Vegetable Bureau shows an increase in liabilities of some £65 with receipts of about £240. It is seen that

this loss was almost entirely due to heavy losses on lime shipments made to Canada after early August when the market suddenly collapsed owing to cool weather. The late shipments were already on the way before advices of the state of the market were received. A bonus of 1c. per lb., in addition to a 1c. advance, was paid for tomatoes, sales being improved by restriction of exports to the late market, from mid-March onwards.

9. Owing to the retirement of Mr. T. P. Jackson in August, 1933, the Agricultural Assistant acted as Superintendent for the balance of the year.

I have the honour to be,
Sir,
Your obedient servant,

A. C. SHILL,
Acting Commissioner of Agriculture.

His Honour
THE ACTING ADMINISTRATOR,
St. Vincent, B.W.I.

CONTENTS.

Section I.

	Page.
Work in Botanic Gardens and Observations on Plants ...	1
Plant Importations	1
Work in Nurseries and Distribution of Plants	2
Inspection and Fumigation of Imported Plants and Seeds ...	3
Miscellaneous Experiments	3
Arrowroot, Spacing Experiments with Ground-nuts.	
Work connected with Insect and Fungus Pests and their control ...	9
Progress in Chief Industries	10
Foreword, Starch, Syrup, Coco-nuts, Cotton, (West Indian Sea Island Cotton Conference) Cacao.	
Progress in Minor Industries	15
Maize, Ground-nuts, Peas and Beans, Miscellaneous, Rum.	
Plant and Animal Legislation, 1933	16
Result of Pupil Teachers' Examination in Agriculture ...	17
Science Teaching	17
Details of Staff and Administration	17
Expenditure, Receipts.	
Correspondence	17
Meteorological Observations	17
Official Visitors	18
Veterinary Report	19

Section II.

Report of the Cotton Experiment Station	20

Section III.

Agricultural Credit Societies and Three Rivers Land Settlement Scheme	22

Section IV.

Government Fruit and Vegetable Bureau	25

Section V.

Government Cotton Ginnery	29

Staff of the Agricultural Department, St Vincent.

Agricultural Superintendent (To 31st August) ...	T. P. Jackson.
Acting Agricultural Superintendent (From 1st Sept.) ...	P. Morrison.
Agricultural Assistant, Manager, Government Fruit and Vegetable Bureau and Inspector, Agricultural Credit Societies	P. Morrison.
Cotton Inspector and Government Vaccinating Officer ...	L. Brown.
Foreman, Botanic and Experiment Stations ...	R. Vanloo.
Officer in Training	F. A. DaCosta.
Clerical Assistant	Miss D. E. Wall.
Laboratory Assistant to Cotton Research Officer ...	Miss N. Grant.

COTTON RESEARCH.

Provided by the Empire Cotton Growing Corporation.

Cotton Research Officer	S. H. Evelyn, D.I.C.T.A.

REPORT ON THE AGRICULTURAL DEPARTMENT, ST. VINCENT.

FOR THE YEAR ENDED DECEMBER 31st, 1933.

Sections I, III and IV of this Report were written by the Acting Agricultural Superintendent, Section II by the Cotton Research Officer and Section V by the Manager, Government Cotton Ginnery.

SECTION I.

Work in the Botanic Gardens and Observations on Plants.

The rainfall measured at the Botanic Gardens for the year was 121·48 inches. This is very much more than the average for the past 40 years which was 103·45 inches. This was the highest recorded in the Gardens since 1916 when 137·63 inches fell.

The Gardens were kept in good condition throughout the year, although very few improvements could be made on account of there being so little money allocated for upkeep, etc. Frequent visits were paid to the Gardens by tourists, visitors to the island, and residents, and comments of a gratifying nature were heard.

Efforts were made to recondition the fern house during the year and several young ferns were brought in to replace the old ones which had become unsightly. This venture was justified and the fern house now presents a greatly improved appearance and the demand for hanging baskets has increased. The "Baby's Breath" of the Nephrolepis family was one of the new ferns brought in and has proved very popular.

Several of the older trees on both sides of the centre walk had to be heavily pruned as they gave too much shade, and the mango trees were covered with "black blight" which usually spread to the young trees underneath, greatly hampering their growth. One of the young trees most affected was the Hog Nut (*Omphalea megacarpa*) which tree has since died.

One of the most interesting trees from the visitors point of view, growing in the Gardens, fruited this year, i.e., the Clove Tree (*Eugenia caryophyllata*). This tree was introduced into the Gardens 147 years ago.

The Sausage Tree (*Kigelia pinnata*) flowered for the first time. The fruits from which the tree derives its name are borne on special hanging stalks and resemble large pale brown sausages, 6 to 8 inches long and about 4 inches in diameter. The flowers which open at night have a very unpleasant odour.

Plant Importations.

Captain H. A. Johnstone of Bloomsbury, London, who made a survey of the palms growing in St. Vincent, gave 20 packets of seeds of tropical palms not found here for planting in the Botanic Gardens. Of these only 7 varieties germinated—5 of which have since died. The two varieties remaining are 4 plants of *Ptychoraphis augusta* and 2 plants of *Sabal blackburniana*.

The Commissioner of Agriculture sent seed of the Dhulia Onion from Nasik, India, and two varieties of tuba root *Derris malaccensis* and *Derris elliptica*. The onion seed was planted out and it is hoped to be able to obtain seed from the bulbs. The two varieties of Derris are growing at the Experiment Station and both look healthy.

One barrel of Sugar Cane cuttings B. 2935 was obtained through the Commissioner of Agriculture from the Barbados Agricultural Department. These were planted out at the Experiment Station for multiplication.

Work in Nurseries and Distribution of Plants.

The following is a list of plants, cuttings, etc., distributed from the nurseries at the Experiment Station during the year. For purposes of comparison those of 1932 are also given:—

Economic and Decorative Plants.

	1932.	1933.
Tomato	40,400	30,400
Onion	6,300	1,300
Cabbage	6,200	300
Manila Hemp	810	—
Grafted Lime	347	1
,, Mango	245	418
Budded Grape fruit	102	345
,, Orange	32	181
Pine-apple	75	172
Miscellaneous Decorative ...	1,387	182
,, Economic ...	142	143
Total	56,040	33,442

Cuttings.

Sugar Cane	16,500	26,050
Sweet Potato	1,500	8,800
Aralia	3,000	—
	21,000	34,850

Miscellaneous.

Arrowroot rhizomes	6,038	6,050
Miscellaneous tubers	159	546
Yams	154	175
	6,351	6,771

It will be seen that there is a decided decrease in the number of Tomato, Onion and Cabbage plants distributed. Regarding tomatoes, the drop in the previous year's prices naturally influenced the demand. There has been a drop in the number of Cabbage seedling sold but the amount of seeds sold has risen from $3\frac{1}{2}$ pounds to 10 pounds. A number of peasants have found that the cost of seedlings and transportation is much more expensive than the cost of growing their own. The same can be said of tomato and onion seedlings.

There has been a marked increase in the number of budded orange and grapefruit and of grafted mango plants sold by this Department. In fact at times the demand exceeded the supply. The plants sold were fairly evenly distributed throughout the island, planters taking the majority. By the quantity ordered it does not seem the intention of most planters to develop their cultivation of fruit to such an extent that there will be sufficient to export, but rather to have a supply on hand for domestic purposes.

The number of common mango trees top-worked during 1933 constitutes a record, 3,313 having been budded. This work is carried out at the expense of the Agricultural Department. A record of all trees top-worked is kept at the Station and recently (March, 1934) an Officer of this Department visited the districts where top-working has been carried out and took a census of all growing trees. The result of his work is tabulated below:—

CENSUS OF MANGO TREES TOP-WORKED 1930—33.

	1930.		1931.		1932.		1933.		Total.	
	Trees.		Trees.		Trees.		Trees.		Trees.	
	Budded.	Successful	Budded.	Successful.	Budded.	Successful.	Budded.	Successful.	Budded.	Successful.
Montrose and Richmond Hill ...	188	78	37	14	230	59	240	93	695	244
Clare Valley and Questelles ...	74	36	15	4	43	18	119	55	251	113
Arnos Vale and Fountain	35	14	5	2	53	27	21	12	114	55
Camden Park ...	34	19	56	29	75	29	49	27	214	104
Lowmans Hill ...	39	17	41	11	92	26	57	36	229	90
Belair ...	27	13	31	21	138	57	206	52	402	143
Villa and Glen ...	19	6	35	21	140	80	77	38	271	145
Stubbs ...	17	5	74	29	—	—	109	58	200	92
Brighton, Prospect and Diamond ...	—	—	68	32	45	23	56	37	169	92
Marriaqua ...	—	—	230	98	—	—	209	60	439	158
Gomea ...	—	—	86	41	138	37	36	15	260	93
Belmont ...	—	—	45	25	—	—	—	—	45	25
Biabou ...	—	—	24	15	—	—	—	—	24	15
Total ...	433	188	747	342	954	356	1,179	483	3,313	1,369
% Successful		43%		46%		37%		41%		41%

The percentage of successes is disappointing but in most cases it could be increased by more care on the part of the owners or renters of land. Considerable damage was frequently caused by stock eating off the young growth and in some instances there was evidence of animals having been tethered to the top-worked tree. Cases were found where trees had been hacked by a cutlass, and at times due to ignorance, cut down. Now that certain trees are coming into bearing, however, the value of the work is being realised and numerous requests for top-working are being received by the Department. The amount of suitable bud wood is scarce and the Department takes this opportunity of recording its appreciation of those people who either sold or gave supplies to the Department.

Inspection and Fumigation of Imported Plants and Seeds.

The following is a list of the plants, etc., which were fumigated or examined under the Importation of Plant Diseases Prevention Ordinance, 1906:—

Vegetable and other Seeds	...	51 parcels
Ornamental and other Plants	...	16 „

Miscellaneous Experiments.

Arrowroot.

The two arrowroot experiments were carried out in collaboration with and under the control of Mr. C. K. Robinson, Scientific Officer, Arrowroot Association.

(*1*) **Spacing Experiment.** This experiment was laid down to determine the optimum planting distance for arrowroot. It was felt that this would serve as a useful guide in the thinning and supplying of arrowroot fields. Before planting, the experimental area was hoe ploughed and cotton seed meal broadcasted at the rate of 1,000 pounds per acre was forked in.

Design of experiment: The lay out was a 4 x 4 Latin Square so that there were four replicates of each treatment. The individual plots were 15 ft. x 20 ft., that is $\frac{1}{145}$ acre approximately.

Planting material: Single joints with only one bud were used. Owing to the unfavourable weather and the attacks of mole crickets the plots had to be supplied in May.

Planting distances.

A	...	6″	x	6″
B	...	12″	x	12″
C	...	18″	x	12″
D	...	18″	x	18″

Plan of Experiment: with yields in pounds per plot.

B	A	D	C
205	197	172	141
A	D	C	B
217	159	162	161
C	B	A	D
142	177	182	140
D	C	B	A
171	153	169	259

Analysis of Variance.

Due to	Degrees of Freedom.	Sum of Squares.	Mean Squares.	$\frac{1}{2}$ log e (Mean Square).
Rows	3	1,569·5		
Columns	3	425·5		
Treatments	3	9,429·5	3,143·2	1·724
Error	6	3,399·5	566·6	0·8672
Total	15	14,824·0		Z=0·8568

The values of Z for $n_1 = 3$, and $n_2 = 6$ from Fisher's Table of Z are:
(1) for P=·05, Z= ·7798
(2) for P=·01, Z=1·1401

The error variance (566·6) in the above table is the variance of a single plot.

The standard error of a difference of two means is, therefore:—
the square root of $\frac{566{\cdot}6 \times 2}{4} = 16{\cdot}83$

The standard error is based on 6 degrees of freedom, hence:—
for P=·05, n=6, t=2·447
and „ P=·01, n=6, t=3·707.

The standards of significant differences are:
(1) 16·83 x 2·447 lb. for P ·05
(2) 16·83 x 3·707 lb. for P ·01

The values are 41·18 lb. per plot and 62·38 lb. per plot respectively. Here again the difference for P=·05 will be taken as the standard of significance.

Treatment means in lb. per plot.

	Treatments.				
	A	B	C	D	Mean of all.
Means	213·75	178·0	149·75	160·5	173·6

DIFFERENCES OF MEANS IN LB. PER PLOT.

	A	B	C	D
A	.	35·75	64·00*	53·25*
B			28·25	17·50
D			10·75	

The significant differences are marked with an asterisk. The other differences are not significant.

The yields per acre are:

TREATMENTS.

		A	B	C	D
Yields in lb. per acre	...	30,950	25,810	21,710	23,270
Baskets per acre	...	310	258	217	233

The yields per acre are somewhat high but it must be remembered that:—

1. The plots are very small, only $\frac{1}{145}$ acre in size and plots yields had to be multiplied by 145 to arrive at yields per acre.
2. A dressing of cotton seed meal at rate of 1,000 lb. per acre was applied.
3. No heads were broken back for replanting, all the rhizomes being dug out as far as possible.

We may therefore conclude that

(*a*) A planting distance of 6″ x 6″ is definitely superior to 12″ x 18″ and 18″ x 18″.

(*b*) It is also most likely superior to 12″ x 12″.

(*2*) **Mulching Experiment.** Harland, in 1917 and 1918, and Jackson in 1931, found that applications of the prunings of *Gliricidia maculata* to Arrowroot plots resulted in considerable increases over the untreated plots. Harland with an application of $2\frac{1}{2}$ tons per acre in one series got an increase of 34 per cent and in another 64 per cent, and Jackson applying 5 tons per acre, obtained increases of 45 per cent and 61 per cent over the control plots.

As these increases were very large it was felt that the experiment should be repeated and extended by the use of mulches other than Gliricidia, as no reason could be seen why Gliricidia alone should give such results. It was felt that any type of mulch should give the same results.

The experiment was laid out at the Experiment Station on the same type of soil as described above.

Treatment of Experimental area: Flat ploughed, no manures were applied.

Design of Experiment: A 5 x 5 Latin Square i.e., 5 replicates of each treatment.

The individual plots were $\frac{1}{75}$ acre approximately.

Planting material: Single joints were used. A fair amount of supplying had to be done owing to unfavourable weather at time of planting and attacks of mole crickets.

Treatments.

1. Control
2. Gliricidia prunings at rate of 160 lb.
3. Hibiscus „ „ „ „ „ „
4. Bengal Beans „ „ „ „ „ „
5. Sword Beans „ „ „ „ „ „

Time of application. The mulches were applied on 17th—21st August, that is, in the rainy season.

Plan of experiment. (Yields in lb. per plot). Treatment numbers in brackets.

(1)	(5)	(4)	(3)	(2)
202	255	294	281	343
(4)	(2)	(1)	(5)	(3)
321	266	227	283	307
(5)	(3)	(2)	(1)	(4)
282	253	311	260	348
(3)	(4)	(5)	(2)	(1)
328	288	297	235	273
(2)	(1)	(3)	(4)	(5)
282	212	269	271	397

Analysis of Variance.

Due to	Degrees of freedom.	Sum of Squares.	Mean Squares.	$\frac{1}{2}$ log e (Mean Square).
Rows	4	702·8	175·75	
Columns	4	18,276·8	4,569·20	
Treatments	4	16,049·8	4,012·45	1·845
Error	12	10,948·6	912·35	1·1105
Total	24	45,978		Z=0·7345

For P = ·05, n_1=4 and n_2=12, Z=·5907.

We may say therefore, that treatment has been effective in producing significant differences of yield.

Treatment means in lb. per plot.

	1	2	3	4	5	General Mean.
Means	234·8	287·4	287·4	304·4	302·8	283·4

Standard error of a difference of two means = the square root of $\frac{912{\cdot}3 \times 2}{5}$ = 19.10

For n=12 and P=·03, t=2·179

Hence a significant difference of two means = 19·10 x 2·179

= 41·62 lb. per plot.

Differences of Means of Treatments.

2 − 1 = 47·4 lb.
6 − 1 = 68·0 lb.
5 − 2 = 13·4 lb.

It is evident, therefore, that: (1) All treatments are significantly greater than control. (2) The various treatments did not yield results that are significantly different from each other.

The Treatment Yields in lb. per acre and baskets per acre.

	1	2	3	4	5
lb. per acre	16,860	21,560	21,560	22,820	22,710
Baskets per acre	169	216	216	228	227

It can be seen then that increases ranging from 28 per cent for treatments (2) and (3) to 36 per cent for treatment (5) have been obtained.

Our final conclusions are:

(1) All mulches of the type used in this experiment are effective in increasing the yield of Arrowroot by at least 25 per cent when applied in the rainy season. From this one may argue that any type of mulch would be equally effective when applied at the same time.

(2) While there is no significant difference in the effectiveness of the various mulches, from a consideration of the table of yields per plot one may say that treatment 4, that is, (Bengal Bean) was the most effective mulch.

A word may be said about time of application. Following the method adopted by Harland and Jackson, the mulches were all applied at the beginning of the rainy season, but it is likely that the increases in yield may be even greater if the mulches are applied in the dry season. They would then help to conserve the soil moisture in addition to whatever effect they have in the rainy season. An experiment will be laid down in the near future to determine the relative effects of dry season and wet season mulches.

To obtain some idea of the monetary gain to be derived from mulching it is necessary to balance against the value of the increased yield all the costs incidental to obtaining this increase.

These costs are: (1) Cutting, carting and applying mulch.
(2) Rental of land on which mulch was grown.
(3) Cost of digging increased yield.
(4) Cost of carting increased yield.

1. Cost of Mulching.

An acre of land when sown to green dressing yields about 15 tons of green material: Bengal Beans (16 tons), Crotalaria juncea (Sun Hemp) 14 tons, Cowpeas 14 tons. Taking an average figure of 12 tons to allow for various losses, an acre produces enough material for mulching about $2\frac{1}{2}$ acres of Arrowroot.

The cost of cutting an acre of green dressing would be about $1.00, and therefore, cost of cutting material for one acre would be $\$1.00 \div 2\frac{1}{2}$.

Cost of cutting mulch material	0.40	per ac. of mulched land.
Cost of Carting	1.00	" " " " "
Cost of applying	40	" " " " "
Total	1.80	

This presumes the source of mulch to be reasonably near the point of application.

2. It must be assumed that if the land were not used for growing mulching material, it could have been rented. An average figure for rental of land would be $7.00 per acre.

Rental of land = $\$7.00 \div 2\frac{1}{2} = \$2.80$ per acre of mulched land.

3. With an average yield of 150 baskets per acre and an increase due to mulching of 30 per cent, we obtain an increase in yield of 45 baskets per acre. The average cost of digging is 6 cents per basket. Cost of digging increased yield = $2.70 per acre.

4. A cart on the average takes 14 baskets of roots per load and carries 6 loads per day, i.e., 14 x 6, equal to 84 baskets per day. The cost of labour for working the cart would be about 55 cents per day and the cost of feeding oxen, depreciation, etc., would bring the cost of a cart per working day to about $1.00. The cost of carting one basket of roots would be $\frac{\$1.00}{84}$ cents.

Hence cost of carting 45 baskets of roots = $\frac{\$1.00 \times 45}{84} = 54c.$

5. Total cost of increased yield per acre delivered at factory yard:—

1.	Cost of mulching	...	$1.80 per acre
2.	Rental of land	...	2.80 " "
3.	Cost of digging	...	2.70 " "
4.	Cost of carting	...	0.54 " "
	Total ...	...	$7.84 " "

6. The value of 45 baskets of roots at 1/- per basket = $10.80.

Therefore profit per acre $10.80 minus $7.84 = $2.96.

Therefore the monetary gain to be derived from mulching, when all incidental cost has been accounted for is approximately $3.00 per acre. To this must be added the profits accruing from grinding roots purchased at 1/- per basket; this, of course, depends on the cost of manufacture of a basket, and is a figure difficult to obtain.

Spacing Experiment With Ground-Nuts.

This experiment was laid down in October, 1933, to determine the optimum distance to plant ground-nuts.

The soil on which the experiment was carried out was slightly heavier than that in which ground-nuts are usually planted. The plots were manured by a mixture of Potash at 30 lb. per acre and Phosphates at 40 lb. per acre. This was broadcasted before planting.

The experiment was laid out on a 4 x 4 Latin Square so that there were 4 replicates of each planting distance. The size of the plots were 25 ft. x 36 ft. or $\frac{1}{109}$th part of an acre.

Two seeds were planted in each hole; blanks were supplied three weeks after the initial planting.

Planting distances.

$$\begin{cases} 12'' \times 12'' \\ 16'' \times 16'' \\ 20'' \times 20'' \\ 24'' \times 24'' \end{cases}$$

Plan of Experiment with yields in ozs. per plot.

B	A	D	C
124	156	160	188
A	D	C	B
184	118	148	128
C	B	A	D
120	184	152	104
D	C	B	A
120	112	144	204

Analysis of Variance.

Due to	Degrees of freedom.	Sum of Squares.	Mean Squares.	½ log e (Mean Square.)
Rows	3	635		
Columns	3	892		
Treatments	3	4,879	1,626·3	1·394
Error	6	7,808	1,301·3	1·282
Total	15	14,214		Z=0·112

From Fisher's Table of Z, when $n_1 = 3$, $n_2 = 6$, and P = ·05, Z = ·7798
„ „ P = ·01, Z = 1·1401

As the experimental value of Z is less than the calculated value, treatment has not exerted a significant effect on yield. However, while the results obtained from this experiment are not significant, they still tend to show that close planting gives heavier yields and the experiment is worth repeating. The average yield per acre of planting 10" x 12" is 1,185 lb. per acre.

16" x 16" „ 987 „ „ „
20" x 20" „ 969 „ „ „
24" x 24" „ 854 „ „ „

It will be noted that the yield per acre is not as high as those previously recorded at the Station. This may be due to the exceptionally heavy rains experienced in October and November which caused considerable washing and brought many seeds to the surface.

Experiments were carried out with Yams, Cassava and Pigeon Peas but the results obtained were not definite enough to be recorded.

Work connected with Insect and Fungus Pests and their control.

The Cotton Worm *(Alabama argillacea.)* Hubn.

Little damage was done by cotton caterpillars during the year under review. Their prevalence was recorded only at two places, namely, Peters Hope and Mustique. In both cases they were brought under control by insecticides before much harm was done.

The Cotton Stainer *(Dysdercus Delauneyi).*

The Close Season for the year under review was from May 1st to August 31st. Owing to the small area of cotton being grown during the 1932—33 crop little difficulty was experienced in getting cotton fields cleaned.

The following table gives the number of stainers accounted for at the Experiment Station for the past ten years:—

Months.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.
January ...	20,086	1,449	2,850	—	29,298	120	63	114	2,636	10,602
February ...	2,800	7,723	—	105	7,217	7,668	91	303	10,083	10,599
March ...	930	6,231	791	1,072	909	7,460	405	18,643	16,733	59,600
April ...	1,225	2,400	5,136	334	42,648	—	13,560	7,215	5,668	21,600
May ...	52	716	100	3,660	—	273	4,430	—	—	—
June ...	—	—	—	3,060	101	163	—	—	—	1,247
July ...	—	—	—	—	2	20	673	—	—	—
August ...	—	1	—	—	705	1,597	179	—	—	—
September ...	—	1	—	—	973	1	—	—	—	—
October ...	—	—	—	—	758	—	—	40	—	—
November ...	—	—	—	—	538	—	—	18	9,826	4,989
December ...	57	550	—	150	—	1	—	—	7,858	10,761

Excluding the month of March it will be seen that stainers were only present in normal quantities.

The Department as usual had men cutting down the food plants of Cotton Stainers. During the year under review 192 John Bull (*Thespesia populnea*) 24 Wild Cotton (native type) and 95 Silk Cotton trees (*Eriodendron anfractuosum*) were cut down.

The Pink Bollworm. *(Platyedra gossypiella).*

Pink bollworm was recorded at the Experiment Station on 2nd March which was 179 days after the cotton was planted. For the previous three years the time was 153 days, 148 days and 146. Very little damage was observed to have been done by this pest. Bollworms were, however, more numerous at the end of the crop.

Arrowroot Worm. *(Calpodes ethlius).*

The incidence of this pest cannot be considered to have been heavier than usual. Mr. C. K. Robinson, D.I.C.T.A., Scientific Officer of the Arrowroot Association made numerous observations regarding this caterpillar and the results of his observations will no doubt be published in due course.

Other insect and fungus pests were present but caused no more destruction than usual.

Progress in Chief Industries.

Forewood.

The domestic exports (less bullion and specie) for St. Vincent for the year 1933 amounted to £112,265 as compared with £95,048 for 1932. This increase coupled with a difference of only £600 in the imports of the two years indicates that there has been a definite improvement in the economic condition of the island. Exports of sugar increased by £6,000 (to the nearest £1,000), Arrowroot by £8,000 and Molasses and Syrup by £6,000, whilst there was a decrease of £3,000 in the export value of copra. The Cotton situation has definitely improved and at the time of writing there are only 226 bales of Cotton in England and 126 bales in St. Vincent compared with 1,135 bales in England and 572 bales in St. Vincent at this time last year.

Starch.

The importance of the arrowroot industry to St. Vincent may be judged from the fact that exports of arrowroot starch for the year 1933 were valued at £55,510, practically half the value of the island's total exports. Planters realising the value of this crop have increased their acreage and have given more attention to manuring and tillage. In a number of cases the starch extraction of the factories has been improved. The number of barrels of arrowroot manufactured has in consequence considerably increased and it is regrettable that this increased production is greater than the increased consumption. However, it has to be remembered that while there is ample room for increased consumption, the amount of land in St. Vincent suitable for arrowroot is limited.

The quantity of arrowroot shipped for the year was 4,589,435 lb. Below is given a comparative table which shows to what countries the crop was shipped during the past six years:—

TABLE 1.

Countries.	1928.	1929.	1930.	1931.	1932.	1933.
United Kingdom ...	1,933,436	1,529,599	1,496,330	1,017,193	1,122,621	1,523,663
U. S. America ...	1,408,672	1,078,093	1,084,536	1,980,809	2 036,728	2,455,858
France ...	23,520	121,401	58,741	31,115	106,415	230,160
Canada ...	239,171	206,396	255,083	246,956	258,497	193,557
Barbados ...	130,491	364,411	378,441	38,945	11,877	8,492
Germany ...	34,956	76,576	60,322	13,920	47,358	78,814
Trinidad ...	29,977	72,392	31,856	27,479	873	6,720
Holland ...	22,400	48,541	138,356	112,311	80,413	51,520
Antigua ...	14,963	20,810	14,941	24,937	8,212	5,835
Jamaica ...	4,480	4,704	7,083	16 026	12,077	12,000
Other Countries ...	28,414	50,836	64,659	22,636	19,762	22,816
Total ...	3,870,420	3,573,759	3,590,348	3,532,327	3,704,853	4,589,435

The drop in the exports to Trinidad and Barbados since the formation of the Arrowroot Association is noticeable. No doubt a great quantity of the exports to these islands used to be re-exported. The increased exports to the United States of America, the United Kingdom and Germany and especially France are very encouraging.

The quantity of cassava starch exported was the highest for a considerable period of years being 681,761 lb. Of this Trinidad imported 469,825 lb. or over 66 per cent. The rest was shipped to Canada 99,008 lb., Barbados 50,215 lb., Martinique 43,360 lb., and Curaçao 19,353 lb. The Canadian shipment was of an experimental nature and while the importers were not satisfied

with the pulverising of the starch, the shipment produced numerous enquiries from Canada, but further shipments were not made on account of the low prices offered. One firm was willing to erect a factory in St. Vincent provided that growers would guarantee to supply them in two years' time with 10,000 short tons of cassava tubers at $6.00 per short ton.

The following table gives the exports of arrowroot and cassava for the past ten years:—

TABLE 2.

Year.	Arrowroot. lb.	Value. £	Cassava. lb.	Value. £
1924	2,952,537	51,361	624,631	6,838
1925	3,190,412	53,174	470,284	4,160
1926	3,291,553	45,807	443,075	4,077
1927	3,195,487	53,309	543,681	4,904
1928	3,870,420	64,508	392,610	3,272
1929	3,573,759	59,563	551,512	4,595
1930	3,590,348	59,019	562,327	4,688
1931	3,532,327	44,915	587,071	3,662
1932	3,704,833	47,524	518,888	3,241
1933	4,589,435	55·510	681,761	3,110

Syrup and Sugar Industry.

Eight hundred and fifty tons of sugar valued at £8,162 were exported from the island during 1933, 450 tons being shipped to Canada and 400 tons shipped to the United Kingdom. This amount of 400 tons shipped to the United Kingdom represents the quantity allocated to St. Vincent under the British Preferential Tariff.

The quantity of syrup exported was 278,528 gallons which includes a certain quantity carried over from the previous year's crop. The syrup shipped to Canada was 161,797 gallons and to the United States of America 116,731 gallons. The prices realised were considered fair in view of the world's economic position.

The area under P.O.J. 2878 has increased, and from observations made it ratoons better in St. Vincent than in Trinidad. A small nursery of B 2935 was laid out at the Experiment Station with plants obtained from Barbados.

The exports of syrup and sugar for the past ten years are given below:—

TABLE 3.

Year.	Sugar. lb.	Value. £	Syrup Gallons.	Value. £	Total Value. £
1924	22,400	280	261,127	15,578	16,038
1925	...	...	268,118	19,672	19,672
1926	...	...	337,099	16,523	16,523
1927	839,000	6,947	171,063	10,496	17,443
1928	2,081,408	14,193	167,044	9,471	23,671
1929	2,408,000	14,095	287,941	12,562	26,671
1930	1,834,560	9,209	183,786	7,360	16,569
1931	1,222,000	5,100	222,057	8,380	13,480
1932	448,000	1,900	164,040	5,994	7,894
1933	1,904,000	8,162	278,528	11,624	19,786

In the following table sugar has been equated into terms of syrup, and syrup into terms of sugar, it being estimated that 300 gallons of syrup are equal to one ton of sugar.

TABLE 4.

Year.	Syrup, Gallons.		Sugar, Tons.
1924 ...	264,127	Equal to	880
1925 ...	368,118	,, ,,	1,220
1926 ...	337,099	,, ,,	1,123
1927 ...	283,563	,, ,,	945
1928 ...	445,744	,, ,,	1,486
1929 ...	610,441	,, ,,	2,035
1930 ...	429,486	,, ,,	1,431
1931 ...	372,057	,, ,,	1,240
1932 ...	324,040	,, ,,	1,080
1933 ...	533,528	,, ,,	1,778

Coco-nuts.

The following table gives the exports of copra and coco-nuts for the past ten years :—

TABLE 5.

Year.	COCONUTS.		COPRA.		Total Value. £.
	Number.	Value. £.	Pounds.	Value. £.	
1924	4,841	22	645,973	5,430	5,452
1925	9,435	20	661,339	5,512	5,532
1926	20,463	102	762,563	9,826	9,928
1627	11,383	52	1,198,441	10,083	10,135
1928	26,703	113	1,505,093	12,543	12,656
1929	118,500	502	1,879,558	11,396	11,898
1930	66,418	273	1,810,167	11,312	11,585
1931	88,185	366	1,842,477	7,755	8,121
1932	72,130	281	2,227,631	11,426	11,707
1933	17,713	38	2,149,641	8,978	9,016

The copra was mainly shipped to Trinidad. Prices were low being in London in January £15. 2. 6 spot, July £11. 10. 0 spot and December £10. 5. 0 spot.

Cotton Industry.

The return obtained from the Sea Island Cotton crop for the season 1932-33 was 81,852 lb. of lint ; the area planted was 669 acres, which means a yield of 122 lb. per acre. The return from estate grown cotton was at the rate of 155 lb. per acre and that of peasant grown cotton at 82 lb. per acre. The area planted was very small, owing to the large stocks that growers had unsold in London and to the poor prices that were being realised by sales. Conditions have now, however, definitely improved and larger areas were planted for the 1933-34 crop.

In the appended tables are given the number of peasant and estate growers of cotton for the past two seasons.

TABLE 6.

1933–34.

			Sea Island.					
			Acres	R.	P.	Acres	R.	P.
888	Peasants, St. Vincent		674	2	34			
4	„ Bequia		3	2	24			
892						678	1	18
12	Large Growers, 24 Estates, St. Vincent		513	0	0			
1	„ Grower, 1 Estate, Grenadines		25	0	0			
13		25				538	0	0
		Total Sea Island				1,216	1	18

		Marie Galante.					
		Acres	R.	P.	Acres	R.	P.
161	Peasants, Union Island	495	1	24			
39	„ Canouan	83	3	13			
200					579	0	37
2	Large Growers, Grenadines				140	0	0
	Total Marie Galante				719	0	37

TABLE 7.

1932–33.

			Sea Island.					
			Acres	R.	P.	Acres	R.	P.
398	Peasants, St. Vincent		301	2	28			
10	„ Bequia		2	3	0			
408						304	1	28
9	Large Growers, 13 Estates, St. Vincent		334	3	0			
2	„ „ 2 „ Grenadines		30	2	0			
11		15				365	1	0
		Total Sea Island				669	2	28

		Marie Galante.					
		Acres	R.	P.	Acres	R.	P.
191	Peasants, Union Island	590	1	7			
46	„ Canouan	90	2	26			
237					680	3	33
2	Large Growers, Grenadines				120	0	0
	Total Marie Galante				800	3	33

The increase in acreage planted under cotton for the crop 1933-34 as compared with 1932-33 is over 80 per cent.

The area under Marie Galante, however, shows a decrease similar to last year.

The yield of cotton lint per acre for the 1933-34 crop is expected to be very low, and is estimated at 80 lb. per acre. The reason for this is mainly due to the abnormally wet weather that was experienced during the last three months of 1933. Time and again seeds were planted only to be washed out by the rains. Soils were water-logged and the stand of cotton established was very poor.

In the following table the area under Sea Island cotton, weight of lint produced, and the return per acre are given for the past decade :—

TABLE 8.

Crops.	Area planted. Acres.	Weight of lint, lb.	Weight of lint, per acre. lb.
1924-25	3,294	449,295	136
1925-26	4,893	585,483	120
1926-27	6,156	507,240	82
1927-28	3,364	328,188	97
1928-29	3,386	263,808	79
1929-30	1,758	262,382	150
1930-31	3,955	605,280	153
1931-32	1,802	209,505	116
1932-33	669	85,852	122
1933-34	1,216	97,000	79*

* Estimated.

The annexed table shows the quantity of Sea Island cotton exported for the last ten years :—

TABLE 9.

Years.		Export of lint, lb.
1924	...	520,368
1925	...	473,219
1926	...	588,793
1927	...	446,274
1928	...	349,246
1929	...	282,903
1930	...	256,167
1931	...	456,089
1932	...	148,860
1933	...	160,792

The Sea Island cotton exported was valued at £8,107.

The quantity of Marie Galante cotton exported was 78,508 lb., valued at £1,619.

West Indian Sea Island Cotton Conference.

Following up the Conference held in Barbados mentioned in last year's report a further Conference was held at the Imperial College of Tropical Agriculture, Trinidad, from November 1st to 6th which resulted in the formation of the West Indian Sea Island Cotton Association. A report of the Conference has already been published.

The St. Vincent delegates were the Hon'ble A. M. Punnett and E. M. Beach, Esq.

Cacao Industry.

The following table gives the amount of cacao exported during the past ten years :—

TABLE 10.

Years.		Weight, lb.
1924	...	138,910
1925	...	154,821
1926	...	174,599
1927	...	135,490
1928	...	179,918
1929	...	156,405
1930	...	180,373
1931	...	146,990
1932	...	84,679
1933	...	100,230

The exports of cacao during 1933 were valued at £1,141.

While the exports of cacao have increased over those of 1932 there was no increase in the crop, and this increase can only be accounted for as a carry over from the previous year. In most cases very little interest is taken in the cultivation of this crop with the result the trees show a neglected appearance and their yields are decreasing. This is mainly due to the poor prices being realised for the beans in the world's markets.

Progress in Minor Industries.

Maize. (Indian Corn).

The quantity of maize exported amounted to 1,884 lb. or 36 bushels.

TABLE 11.

Year.	Exports, bushels.	Value £.
1924	2,766	752
1925	2,754	627
1926	1,751	388
1927	1,901	619
1928	961	299
1929	808	239
1930	921	210
1931	325	72
1932	241	52
1933	36	8

The decline of exports of maize is rather alarming and one of the factors to which this can be attributed is that certain islands find it more profitable to grow their own corn than import. The price offered for corn is so low that a considerable quantity has been stored up at the Government Cotton Ginnery in the hope that conditions would improve.

Ground-nuts.

The quantity of ground-nuts exported shows a further decrease when compared with that of previous years. The limiting factor is the price that is being realised for the exported product. The exports and values for the ten years are given below :—

TABLE 12.

Year.	Exports, bushels.	Value £.
1924	6,195	4,438
1925	5,251	3,794
1926	3,673	2,370
1927	5,067	3,219
1928	6,444	4,176
1929	6,902	4,486
1930	5,557	3,610
1931	3,271	1,090
1932	1,223	398
1933	910	292

As in previous years the greater part of the exported crop was shipped to Trinidad.

Peas and Beans.

The quantity of peas and beans exported was greater in 1933 than in 1932 by about 40 per cent. This increase is encouraging as this crop helps to increase the fertility of the soil.

TABLE 13.

Year.	Exports, Bushels.	Value £.
1924	1,744	984
1925	1,548	866
1926	965	476
1927	745	352
1928	1,855	876
1929	3,398	1,673
1930	4,150	1,816
1931	1,031	385
1932	1,678	545
1933	2,320	754

The exports were more or less evenly divided between Trinidad and Barbados.

Miscellaneous.

The quantity of tomatoes exported was 33,850 lb. valued at £250, animals £6,426, sweet potatoes £2,186, other vegetables £918, fruit £661, spices £653, hides £170, whale oil £69, fire wood £47 and turtle shells £121.

Rum Industry.

The number of proof gallons exported was 9,832 valued at £1,475; 40,182 gallons were distilled.

Plant and Animal Legislation, 1933.

Ordinance No. 2 of 1933. An Ordinance to regulate the importation of animals into this Colony for the purpose of preventing the introduction of contagious or infectious diseases and to repeal the Importation of Animals (Diseases Prevention) Ordinance of 1932. The repeal, however, does not affect the validity of any Orders or Regulations under the repealed Ordinance, and such Orders and Regulations shall have effect until rescinded or amended by the Governor in Council under the new Ordinance.

Ordinance No. 26 of 1933. An Ordinance to provide for the control of cotton seed intended for planting empowering the Agricultural Officer to directly control all cotton seed intended for planting.

Order in Council 27th February, 1933. Prohibiting the importation of animals from Trinidad made under Importation of Animals (Diseases Prevention) Ordinance.

Order in Council 20th April, 1933. Declaring Close Season for cotton made under Cotton Protection Ordinance.

Order in Council 28th December, 1933. Removing prohibition with respect to the importation of animals from Trinidad made 27th February, 1933 under Importation of Animals (Diseases Prevention) Ordinance.

Rules 22nd February, 1933, governing the exportation of fruit made under exportation of Fruit Ordinance.

Rules 23rd May, 1933, governing sale and allotment of small holdings of land at Three Rivers Estate made under Land Settlement Ordinance.

Result of Pupil Teachers' Examination in Agriculture.

The Acting Agricultural Superintendent set and marked the papers for this examination. Thirty-two candidates sat, 22 First Year, 5 Second Year and 5 Third Year students. The passes were as follows :—First Year 14, Second Year 4 and Third Year 4. As in the previous year most students only obtained sufficient marks to pass. The average pass marks were as follows:— First Year 47 per cent, Second Year 52 per cent, Third Year 51·5 per cent.

Science Teaching.

As in the previous year this work was carried out by Mr. D. S. Cozier, who is Science Master at the Grammar School.

Details of Staff and Administration.

The sum of £2,312 was voted for the upkeep of the Agricultural Department during 1933.

The following gives details of expenditure :—

	£	s.	d.
Salary, travelling allowance, Agricultural Superintendent	338	12	10
Salary, travelling allowance, house allowance, Agricultural Assistant	453	0	0
Salaries, Foreman, Botanic and Experiment Stations, Cotton Inspector, Officer in Training, Clerical Assistant, Laboratory Assistant to Cotton Research Officer, and travelling allowances, Cotton Research and Cotton Inspector	415	0	0
Upkeep, Botanic and Experiment Stations, (labour, manures, tools, seeds, etc.)	519	16	6
Destruction of food plants of the Cotton Stainer ...	7	14	1
Salary, Government Vaccinating Officer	20	0	0
Special Cotton Investigations	23	14	10
Special Services	32	3	4
Contribution to Imperial College of Tropical Agriculture	338	0	0
Contribution to various Scientific Institutions, Bureaux and Unified Agricultural Services	40	0	0
Total	2,188	1	7

Receipts.

The receipts for the sale of plants and produce at the Experiment Station amounted to £50. 5. 0.

Correspondence and Distribution of Information on Agricultural Matters.

The number of minute papers dealt with amounted to 175 and the number of letters despatched was 521 ; in addition, 226 reports were distributed.

Meteorological Observations.

The average rainfall for the past 40 years at the Botanic Gardens was 103·45 inches. The rainfall for 1933 was 121·48 inches which is 18·03 inches in excess of the above average.

Rain was recorded at the Botanic Gardens on 290 days ; the heaviest fall was on September 28th when 8·20 inches were recorded. At the Experiment Station rain was recorded on 255 days.

The following table gives the mean temperature, average degree of humidity and the mean barometric pressure in inches for each month during the year :—

METEOROLOGICAL OBSERVATIONS, EXPERIMENT STATION, FOR 1933.

TABLE 14.

Month.	Mean Temperature F°.	Average degree of humidity Saturation 100.	Mean Barometric pressure in inches.
January ...	77·6	70·7	29·936
February ...	76·8	68·3	29·991
March ...	78·5	72·2	29·995
April ...	79·3	75·7	29·967
May ...	80·4	76·6	29·949
June ...	80·3	80·0	29·975
July ...	80·8	76·7	29·962
August ...	80·6	75·8	29·956
September ...	81·1	76·3	29·937
October ...	80·6	75·3	29·915
November ...	79·7	74·1	29·880
December ...	78·8	75·3	29·929

Atmospheric Pressure.

The reading of the Barometer, corrected for instrumental error, elevation, temperature and latitude, ranged from 30·101 on February 18th to 29·782 on 3rd October.

The following gives the rainfall recorded at the various Stations for 1933 :—

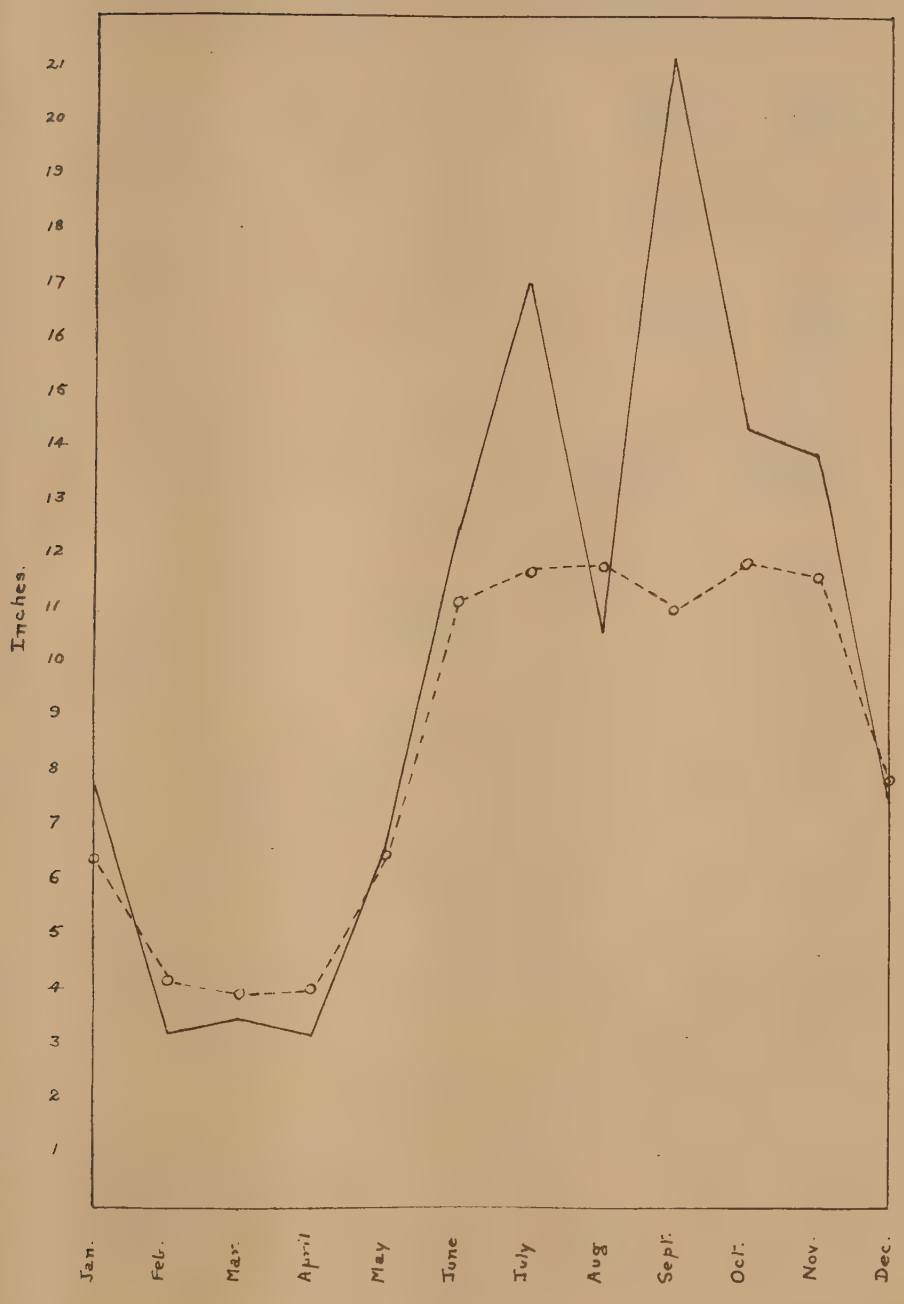
TABLE 15.

Stations.	Jan.	Feb.	Mar.	Apr.	May	June.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Richmond Vale ...	9·44	2·51	4·10	2·54	5·90	12·43	19·16	21·30	19·82	16·25	18·84	8·41	140·70
Mesopotamia ...	7·84	5·14	3·84	4·04	8·77	10·38	14·93	16·62	15·16	12·48	18·50	7·08	124·78
Botanic Gardens...	7·72	3·28	3·49	3·20	6·58	12·50	17·03	10·66	21·21	14·45	13·91	7·47	121·48
Buccament ...	8·31	3·46	2·72	3·18	4·04	11·15	17·67	16·31	14·08	12·07	16·10	10·05	119·14
Experiment Station ...	6·86	4·13	2·95	3·18	6·93	12·40	16·49	10·66	16·29	14·80	13·63	7·16	115·48
Grand Sable ...	4·20	1·77	2·86	3·09	3·36	9·22	11·76	25·01	14·08	12·93	15·04	3·44	106·76
Sans Souci ...	4·81	2·13	2·28	2·10	5·91	10·34	10·50	12·35	11·45	10·98	14·82	3·85	91·52
Brighton ...	4·27	2·26	2·92	1·75	5·26	9·89	10·93	7·25	16·17	7·10	12·48	2·51	82·79
Bequia ...	5·51	2·58	3·25	5·08	3·21	9·27	8·62	11·12	12·78	6·46	12·01	2·20	82·09
Colonarie ...	5·87	2·25	3·09	2·48	5·70	6·68	9·72	11·28	11·88	10·83	6·68	2·85	79·31
Peters Hope ...	2·48	1·03	1·26	1·00	2·64	6·64	9·29	13·02	17·58	7·30	8·71	4·23	75·18
Canouan ...	1·14	1·05	·85	1·03	1·83	7·81	7·64	8·66	10·03	4·28	5·84	1·59	51·75
Mayreau ...	1·65	·81	·81	·93	2·36	6·89	4·01	6·66	7·61	3·58	5·68	1·89	43·78

Official Visitors, 1933.

Mr. G. A. Jones, Commissioner of Agriculture, landed on February, 3rd while intransit on Lady Boat and inspected the Experiment Station. He also landed on September 4th when a meeting of the Local Cotton Association was held to meet Mr. Munro-Carr of Messrs. Coats Ltd. On 5th December he paid a visit of three days to St. Vincent and made a general brief inspection of agricultural matters in the island including a visit to the Three Rivers Land Settlement Scheme and the Glen Community School.

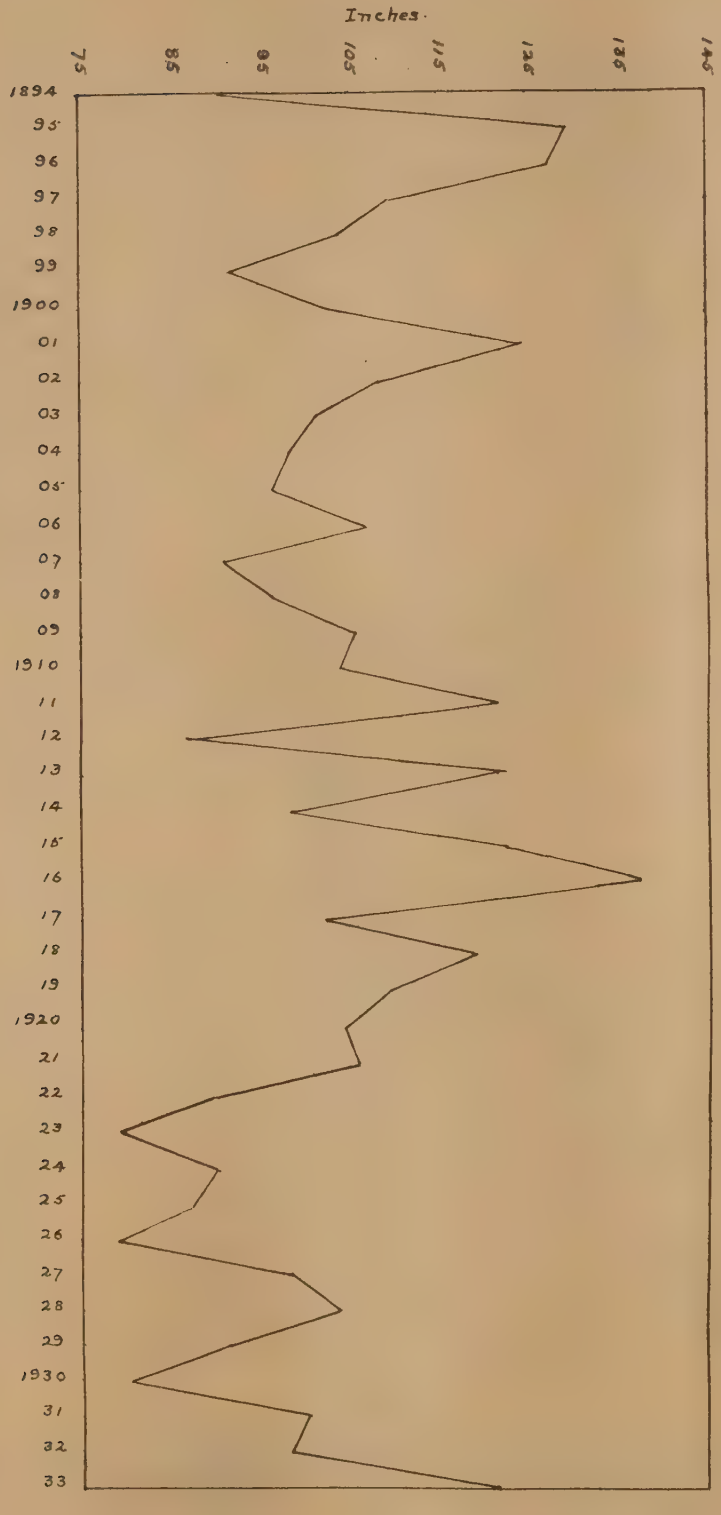
Monthly Rainfall, Botanic Gardens, St. Vincent, 1894–1933.



Black line — represents Monthly Rainfall, 1933.

Dotted line — represents Mean Monthly Rainfall, 1894–1933.

Annual Rainfall, Botanic Gardens, St. Vincent, 1894–1933.



The Principal of the Imperial College of Tropical Agriculture, the Commissioner of Agriculture and the Director of Agriculture, Trinidad, landed from the Lady Boat on the 20th January.

Mr. A. C. Shill, M.Sc., A.R.C.S., D.I.C., Marketing Officer, Windward and Leeward Islands, paid two visits to St. Vincent in 1933, January 27th to February 3rd and April 14th to 21st. During these periods he visited estates in various parts of the island and advised on the packing and marketing of fruit and vegetables.

Dr. S. C. Harland, Geneticist, Cotton Research Station, Trinidad visited the island from the 12th to 17th February. His visit was made to inspect the work of the Cotton Research Officer at the Experiment Station, and discuss the programme for the following year.

Professor F. Hardy, M.A., visited the island from March 31st to April 14th and took samples of soil from the various parts of the island. His report on the soils of St. Vincent will be published in due course.

Mr. J. B. Hutchinson, Assistant Geneticist, Cotton Research Station, Trinidad, visited the Cotton Experiment Station from the 31st March to the 7th April primarily to select or discard the Moco strains of cotton taking bearing and habit into consideration.

Mr. A. K. Briant, M.A., Mycologist and Bacteriologist, Imperial College of Tropical Agriculture, paid a visit to St. Vincent from February 24th to March 3rd. The object of his visit was to investigate diseases affecting arrowroot in St. Vincent.

Veterinary Report.

The following gives the number of animals exported for which no certificates were given :—

TABLE A.

Class of Animal.	Number.	Value £.
Sheep ...	756	408
Goats ...	2,640	870
Pigs ...	2,637	3,422
Total ...	6,033	4,700

TABLE B.

Showing kind, number and value of stock for which veterinary certificates were given, also the places to which the animals were exported.

Class of Animal.	Barbados.		Trinidad.		St. Lucia.		Total.	
	No.	Value £.	No.	Value £.	No.	Value £.	No.	Value £.
Cattle ...	63	360	5	25	2	6	70	391
Horses ...	5	115	2	108	—	—	7	223
Mules ...	2	35	4	48	—	—	6	83
Asses ...	104	149	46	57	—	—	150	206
Sheep ...	1	1	—	—	—	—	1	1
Goats ...	2	3	—	—	—	—	2	3
Total ...	177	663	57	238	2	6	236	907

TABLE C.

Thirty-two animals valued at £310 were imported. Details are given in the following :—

Class of Animal.	Number.	Value £.
Horses ...	7	117
Camels ...	2	100
Llama ...	1	50
Puma ...	1	10
Goats ...	1	1
Pigs ...	13	18
Dogs ...	7	14
Total ...	32	310

Certificates were granted for 2,304 hides valued at £73, and 852 valued at £97 were exported without certificates.

SECTION II.

REPORT OF COTTON EXPERIMENT STATION, ST. VINCENT, PERIOD 1st SEPTEMBER, 1933, TO 28th FEBRUARY, 1934.

General.

For the period under review the rainfall conditions can be described as very wet for the months September to December, fairly wet in January, and fairly dry for February.

Contrary to custom most of the cotton strains were sown in three inch pots, and then transplanted, as a means of overcoming loss from mole crickets, slugs and cut worms. Sowing began on the 1st September and was completed by the 3rd. With the exception of the Moco strains seed germination was in general satisfactory. On the 28th September a rainfall of 8·20 inches (in four hours) was recorded. This did a lot of damage to the four-week old seedlings.

Due to the constant rains growth was retarded so that the plants never attained their customary height and bearing. Notwithstanding very good yields were obtained.

The Island's acreage (1,216 acres) was exclusively planted with the superfine strain V.135 which is now practically a pure line. 'Selfed' seed of the new V.135 strain was multiplied in isolation on Mustique Island to obtain seed for the 1934-35 crop.

Pink Boll Worm was first observed on the 13th February, three months later than usual. Very few have so far been seen at the Station or in commercial fields. In general it can be stated that damage from pests and diseases was insignificant, except in the plot of the backcross (Ishan A x V.135) x Ishan A where Angular Leaf Spot was responsible for a fair loss of bolls.

1. Experiments with Sea Island Cotton. The experiment to transfer the gene R^2 (Red Plant-Body-weak spot) from the Trinidad Red Kidney Tree cotton to Sea Island V.135 was continued.

After back-crossing the F_1 of Red Kidney x Sea Island ordinary to Sea Island (ordinary) again, two further back-crosses were made. The third-back cross was to V.135 superfine. Subsequently the strains have been selfed. This year nine strains were grown. Seven bred true to red plant body and weak spot, and five to superfine lint length. Some of the red plants possess lint lengths up to 68 mm, i.e. above those previously recorded. The yield of the strains is, however, not quite so good as that of the standard V.135, though considerable improvement has taken place in this respect. Further selections will be continued. Repeated back-crossing of heterozygous red to V.135 has also been continued.

The effect of the gene R_2 on lint length has been studied ; there is no significant difference in lint length between red and green plants.

Although it is now considered that the Superfine V.135 strain is practically pure selection is still being carried on for agricultural properties, particular attention being paid to yield, expressed as the total number of bolls on the main axis. Six of the highest yielding plants were selfed and observations made on the behaviour of their progeny in respect of (1) node number (2) no. of buds shed (3) no. of buds and flowers produced (4) no. of bolls per plant. The observations on 2, 3, and 4, were made at 70, 95, and 120 days after sowing for 92 selected plants.

Some interesting physiological correlations were observed. Plants with the lowest node numbers produced the highest number of bolls per plant.

Two strains were grown from the plants with longest lint in 1932 (lint length 62·2 mm., and 62·0 mm.) The progeny showed no positive result from selection of these high values. The lint index of these strains increased from 37 mg. to 45 mg. which may possibly be due to an application of sulphate of ammonia. The environmental causes of fluctuations in lint index are still very little known.

Last year several plants in the V. 135 plot were noticed which had shed nearly all their buds and bolls and which remained green and fresh when neighbouring plants had dried up. The question arose—were these plants mutants, (chromosomal or genetic) or merely fluctuations ? The selfed offspring of three of these plants gave perfectly normal plants with normal yield. The great shedding observed in the previous generation was thus an environmental effect and doubts as to the purity of the strain were thus removed.

2. Experiments with perennial tree cottons (Moco, Carriacou and Marie Galante). Selection experiments with Moco were continued, and a large number of progeny rows were grown. In previous years many of the lines threw recessive naked seeds, and until lines pure for tufted were obtained no strains could be sent out for testing. Some strains free from the naked gene are now pure for a lint length of 47–48 mm. and are ready for extended trial, though the difficulty of obtaining selfed seed of these perennial cottons in St. Vincent is considerable.

Some strains selected from Mr. Simmons' long linted Carriacou type were also grown.

Comparing the Carriacou type with Moco, it is fairly clear that both types have advantages not possessed by the other. Moco for example usually germinates very badly and has creamy lint, both these characters being undesirable. Carriacou has white lint and gives excellent germination but is probably inferior to Moco in agricultural properties. It will probably be necessary to evolve new combinations of Moco and Carriacou and first crosses have been made this year.

The F_2 of Moco x Marie Galante grown this year gave some excellent plants. Eleven have been retained for progeny rows next year.

The Marie Galante strain is now pure for lint length 49 mm. and is being retained for crossing work.

3. Experiments with Ishan Cotton from Nigeria. The object of this experiment is to see whether the lint length and fineness of Ishan can be improved by crossing with Sea Island, subsequently extracting long linted strains after repeated back-crossing of long linted heterozygotes with Ishan.

This year the 1st Back-cross of F_1 by Ishan was studied.

The material is not yet fully analysed though it is obvious that most of the plants are longer linted than Ishan. Most of them however were affected by Angular Spot.

4. Experiments with U4 types containing the Asiatic Red gene. Work at the Trinidad Station has shewn that the cross New World G. barbadense L. (Sea Island—Egyptian) x the Asiatic Red flowered G. arboreum is partly fertile on the male side. As a result of repeated back-crossing to New World cottons, it has been found possible to transfer the Red gene from Asiatic to U4. A bulk sample of this material was sent from Trinidad and grown this year. The plants exhibited some remarkable features not previously seen in New World Cottons, and doubtless derived from Asiatic. Generally speaking they were early maturing and very heavy yielders. All were immune from Angular spot and some plants possessed lint lengths of above 45 mm. It will probably be possible to obtain out of this material some new synthetic combinations with valuable lint properties.

5. Experiments on seed storage. Information on the best conditions for storing seed in Tropical countries is practically non-existent, and it was decided to institute a preliminary cold storage experiment. Sea Island cotton seed was kept (*a*) at ordinary room temperature circa 80° F and (*b*) in cold storage at 22° F. After nine months storage the germination was 86% as against 54% for ordinary room storage.

6. Miscellaneous. A large number of miscellaneous types were maintained in pure culture, including the combinations of U4 with various other types. Crosses were successfully made between several New World types and the wild species G. lanceœforme. Observations were taken on resistance to Black-scale for further study next year.

SECTION III.

REPORT ON AGRICULTURAL CREDIT SOCIETIES.

During the year under review the Agricultural Credit Society movement lay more or less dormant. The following gives a brief summary of the societies still registered.

Clare Valley—Questelles. This Society is the only one that can be said to have functioned actively. The Society had out on loan to its members over £100. Apart from £20 borrowed, the money loaned is the property of the Society. This Society is deserving of recognition by Government. Members are prompt in paying up the amounts due at the stipulated time, and any monies loaned the Society are paid back as soon as called for. It would be a great incentive to members if Government could assist them in any way.

Troumaca. This Society is slowly paying off its indebtedness to the Troumaca Provident Society. The amount now owed to the Provident Society is £31. 13. 4. Members owe the Credit Society £47. 12. 0. One cannot help noticing the definite lack of interest that both the officers and members take in their Society at the present time. Another thing which is beyond their control is the low price of the crops that they can grow.

Redemption. There has been no transactions in this Society for the year.

Georgetown. This Society has conducted no business during the year, but if the Society could obtain a loan at a reasonable rate of interest, they would again function actively. It was suggested in last year's Report that the large area from which this Society was drawn could be cut down by forming a new society in the Three Rivers—Park Hill District, a suggestion that is now being carried out, and this new society should be registered early in the new year.

It is very pleasing to observe that Government has at last seen its way to assist the Credit Society movement by obtaining the sanction of the Secretary of State to a loan of £300 to the proposed new Society in the Three Rivers District. In this, St. Vincent is following in the footsteps of Trinidad where regular advances to Credit Societies are made at an interest rate of 4% per annum. This course of action was suggested in the last annual Report. The Government has however, charged interest at the very low rate of $2\frac{1}{2}\%$, a fact which is much appreciated by the people in the District. The success of this new Three Rivers Society will be watched very closely, and should it prove the success that it is justifiably hoped it will be, it will act as an incentive to Government to reorganize and assist other Credit Societies.

Three Rivers Land Settlement Scheme.

The Three Rivers Estate was purchased by Government for the purpose of furthering the Land Settlement Scheme in this Colony. £5,510 was paid for the Estate and Government took possession on 17th November, 1932.

Survey. The Survey of the Estate into allotments was performed by Mr. W. E. Dolly, Superintendent of Works and Crown Lands, who has considerable experience in this class of work. He commenced the survey as soon as the Estate had been taken over, and had it completed by the end of April.

A summary of his survey is as follows :—

		Acres	R.	P.
132 Allotments	...	627	3	14
35 House Lots	...	4	0	12
Reserves	...	39	0	33
Roads	...	22	1	32
Rivers	...	12	3	34
Reserves along Rivers	...	9	3	33
Three Rivers Canal	...	2	0	12
Mt. Grenan	...	3	1	33
Total acreage	...	722	0	3

The size of the allotments vary but most of these are between three and six acres.

Valuation of Allotments. On the completion of the survey the Sub-Committee—appointed by Government—visited each allotment and classified it into one of nine classes. As approximately £9,000 had to be realised by the sale of land to cover the purchase of the Estate, interest on loan and other expenses over a period of ten years, the Committee valued the classes as follows, with slight variations :—

Class.	Value per acre approx.	Acreage. Acres	R.	P.	Approx. value. £.
Aa.	22	58	2	9	1,300
A.	20	68	0	36	1,450
Az.	18	31	2	22	550
Ba.	16	94	0	21	1,500
B.	14	93	2	13	1,300
Bz.	12	125	1	29	1,500
Ca.	10	79	3	34	800
C.	8	54	1	24	450
Cz.	6	21	3	26	150
		627	3	14	9,000

The value of an allotment was usually calculated to the nearest ten shillings. Some of the Aa. land was valued as high as £23. 10. 0 and A. lands as low as £19. The thirty-five house spots were valued at £5 each, giving a grand total for land sales of £9,181. 7. 6.

Sales of Land. Sales of land commenced on the 25th May, 1933, and by 30th June 228 acres were sold together with thirty-one lots. At the time of writing (eleven months after the commencement of sales) 338 acres which is more than half the area for allotments have been taken up together with all the house-spots.

The sale of the remaining blocks would be accelerated if Government could see their way to reduce deposits to say 10 per cent of the purchase money instead of the 20 per cent now required. There is still a desire for land but the necessary capital is not available.

General. During the 1933 crop all shareholders had their arrowroot manufactured at Three Rivers Works. In lieu of rent for the land, and cost of manufacture—less labour—Government claimed as their share one third of the starch. This amounted to 6,559 lb. which can be conservatively valued at £54. 0. 0. The grade obtained was good.

Large numbers of coco-nuts were sold from the unsold allotments at 30 cents per 100—purchaser collecting and husking same. Other methods of sale were experimented with but none proved so remunerative to the scheme. Coffee, cocoa and nutmegs were sold on the same principle.

It is pleasing to note the progress that purchasers have made in the development of their allotments. Most of those who bought coco-nut lands have had all the trees cut down but find it very difficult to get other crops to grow on account of the coco-nut trees roots. The main crop that is being planted is arrowroot but certain areas have also been planted in cotton, cane, sweet potatoes and other vegetables.

The Public Works Department has developed the road system on the Estate and every allotment is accessible by road. The arrowroot mill has also been repaired and it is contemplated to put the syrup works in order. Both these factories will be handed over to the proposed Agricultural Credit Society in the district at a very nominal rental.

The financial position of the scheme is shown by the following statements compiled by the Treasury Department:—

Statement showing position of Land Settlement Loan (1932) at 31st December, 1933.

	£ s. d.	£ s. d.
Amount of Loan	... ...	6,600 0 0
Purchase money for Estate	5,510 0 0	
Survey expenses	392 6 0	
Roads	198 5 10	
Repairs to Dwelling House	18 14 10	
„ „ Factory	60 18 1	
Rangers	23 9 3	
Contingencies	46 12 9	6,250 6 9
Balance (unexpended portion of Loan of £6,600) ...		349 13 3
		6,600 0 0

Statement showing position of Three Rivers Land Settlement Fund at 31st December, 1933.

RECEIPTS.	£ s. d.	£ s. d.
Resale of Land	1,062 7 0	
*Sale of Crops and Produce	21 5 3	
„ „ Houses	5 5 0	
Pound fees	3 15 6	
Manufacturing crops	3 1 0	1,095 13 9
EXPENDITURE.		
Contribution to Sinking Fund for repayment of Loan ...	600 0 0	
Interest charges on Loan	317 10 0	917 10 0
Balance to Credit of Fund		178 3 9
		1,095 13 9

*Does not include sale of 30 barrels of arrowroot.

SECTION IV.

REPORT ON THE GOVERNMENT FRUIT AND VEGETABLE BUREAU.

During the year the following produce was shipped. The quantities (in numbers or lbs.) shipped to Bermuda and Canada are shown separate.

TABLE I.

Produce.	Where shipped and quantity.		Total.	
	Canada.	Bermuda.	Crates, etc.	Quantity.
Avocado pears ...		157 x 20 Crates	157 Crates	3,140
Julie mangoes ...	4 x 30 Crates	46 x 30 „	50 „	1,500
Green limes ...	883 x 25 lbs. Crates	117 x 40 lbs. Crates	1,000 „	26,755 lbs.
Groundnuts ...		2 x 116 „ Bags	2 Bags	232 „
Tomatoes ...	397 x 20 „ „	68 x 20 „ Crates	465 Crates	9,300 „
Egg plants ...		3 x 35 „ „	3 „	105 „
Parsley ...	2 x 12 „ „		2 „	24 „
Beets ...	1 x 20 „ „		1 „	20 „
Pumpkins ...		26 x 80 „ Brls.	26 Barrels	2,080 „
Ginger ...		1 x 75 „ Bags	1 Bag	75 „
Lettuce ...	12 x 12 „ „		12 Crates	144 „
Carrots ...	1 x 20 „ „		1 „	20 „
Cucumbers ...		2 x 30 „ Crates	2 „	60 „

It will be noted that there has been a decided decrease in the volume of trade carried out by this Institution. This can be attributed to the following causes:—

(i). The poor prices realized for winter vegetables (especially tomatoes) during the previous season.

(ii). The poor returns per acre of tomatoes obtained by growers during the previous season.

(iii). This Institution would only buy limited quantities of produce for export to Bermuda, as previous experience has shown that that market is easily glutted.

(iv). Owing to large quantities of high grade mangoes being shipped from other islands, it would not pay to ship other than grafted ones from St. Vincent.

Green Limes.

It will be seen from Table I that a much larger quantity of green limes was shipped to Canada than in previous seasons. Last year's returns were very satisfactory ; limes netting 4½ cents per lb. St. Vincent (Agricultural Report 1932 p. 35). This was so encouraging, that every effort was made to increase shipments for 1933. Early returns showed a good profit, but later, sales were very disappointing. Table II gives a detailed account of lime shipments to Canada, how shipments after the 1st August were a loss, and how rapidly the price dropped. One of the largest brokers wrote as follows : "I might say, however, once again for some reason or other the consumption of limes fell off overnight".

TABLE II.

LIME SHIPMENTS TO CANADA.

Date.	Cost of Limes.			Other Local Expenses.			Freight and Agents Expenses.			Total Expenses.			Gross Sales.			Profit.			Loss.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	l.
20/6/33 ...	2	13	7½	2	8	10½	6	3	9½	11	6	3½	13	7	4½	2	1	1	...	...	...
4/7/33 ...	2	18	10½	3	5	9	8	7	1	14	11	8½	16	10	0	1	18	3½	...	...	...
18/7/33 ...	6	19	1½	7	4	5½	17	11	10½	31	15	5½	39	7	1	7	11	7½	...	...	...
1/8/33 ...	8	0	0½	12	12	1½	30	4	11½	50	17	1½	60	6	6	9	9	4½	...	...	...
15/8/33 ...	6	6	8	9	7	6	20	10	3	36	4	5	16	1	5½	...	...	...	20	2	11½
19/8/33 ...	5	19	6½	7	4	5	19	0	6	32	4	5½	8	2	0½	...	...	...	24	2	5
12/9/33 ...	12	14	9½	17	16	6	16	7	0½	46	18	4	...	...	...	...	...	...	46	18	4
Total ...	45	12	8	59	19	7½	118	5	6	223	17	9½	153	14	5½	...	...	...	70	3	4

LIME SHIPMENTS TO BERMUDA.

	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Totals ...	7	16	1½	7	17	11	11	15	0	27	9	0	28	18	3½	1	9	3	...	...	...

As soon as we were informed of market conditions we stopped shipping, but even so, a heavy loss was sustained.

Another point which we should not lose sight of, is that of shipping to too many different Brokers or Agents. Certain shippers in other islands have been doing this with detrimental results to the trade as shown by the following remarks:—"The reduction in price is due to limes being shipped to

people that are not regularly in the fruit business. If we can get control of the limes from the West Indies, we can assure the growers of far better results."

From reports we have received, there is a growing market for limes in Canada. But as we now know, this market is limited at present to the summer months, and as the population of Canada is small, that market even, has its limitations. The chief competitors of limes in Canada, are lemons.

Limes were, with the exception of one case, bought outright at one cent per lb.

Bermuda shipments show a small profit, but the market is very limited.

Tomatoes.

The season's tomato exports were very small due to reasons stated above. 1,688 crates were shipped from the island, of which the Bureau handled 465.

One cent per lb. was advanced for all tomatoes accepted ; and a bonus was to be declared at the end of the season after all expenses, commissions etc., had been paid. The sum of £18. 15. 4 was to the credit of this bonus account at the end of the season. It was decided to bring this amount up to £21. 11. 0½—the amount advanced to growers, and to reduce the Bureau's commission to approximately 3½% to meet this amount, thus allowing a bonus of 100%, or one cent per lb. to be paid to growers. Table III shows this account differentiating Bermudian and Canadian shipments.

TABLE III.

Country.	Amount Advanced.	Other Local Expenses.	3½% Commission Approximately.	Freight and Agents' charges.	Total Expenses.	Gross Sales.	Amount available as bonus.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Canada	18 10 10½	28 6 10	3 9 6	35 6 1½	85 13 4	99 19 1	14 5 9
Bermuda	3 1 0	5 1 9½	1 3 6	18 12 2	27 18 5½	34 0 5	6 1 11½
Local	... ...	... ...	... ...	... ...	... ...	1 4 2	1 4 2
	21 11 10½	33 8 7½	4 13 0	53 18 3½	113 11 9½	135 3 8	21 11 10½

It will be seen that the Bermuda market realized the highest prices, prices ranging as high as $2.40 per crate. This was greatly offset, however, by the heavy Import Duty which had to be paid. The net returns however, were better than the Canadian ones as shown by the amount available as bonus. This Bermuda market however, cannot be relied upon, and it was only due to exceptionally cold weather conditions experienced in that Island last Spring, that their own crop was so late in maturing.

The Canadian market during the months of March, April and May, showed a distinct improvement over last year. The months of January and February, we are informed, were very poor—worse than last year. Anticipating this, growers in St. Vincent only grew for the late months, and were much better off than the growers in the Northern Islands who had the greater part of their crop maturing in January and February.

Avocado Pears.

Little trade was done in avocado pears as it has been found that St. Vincent pears do not as a rule carry well in Cold Storage over a period of more than ten days, and are naturally at a great disadvantage to St. Lucia and Dominica, where the period of transport (and in cold storage) is decidedly shorter. Pears were therefore only shipped when it was known that shipments from the other islands were relatively small.

Pears were bought outright at prices varying from ½d. to ¼d. and were all shipped to Bermuda.

TABLE IV.

Cost of Pears.	Other Local Expenses.	Freight and Agents' Charges.	Total Expenses.	Gross Sales.	Loss.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
4 13 0½	9 18 6	17 8 2½	33 16 9	33 2 5½	14 3½

Mangoes.

The trade in mangoes was small, due to the limited quantities of grafted varieties available. With the exception of one small trial lot to Canada, all were shipped to Bermuda. The trial lot (4 crates) were satisfactory, and every effort should be made to develop this Canadian market, as the export trade is bound to increase, considering the large number of grafted trees that should soon come into bearing in these islands. Table V gives the figures for this trade.

TABLE V.

Country.	Cost of Fruit.	Other Local Expenses.	Freight and Agents' Charges.	Total Expenses.	Gross Sales.	Profit.	Loss.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bermuda	4 0 11	2 17 11	5 11 5½	12 10 3½	11 17 6	... ...	12 9½
Canada	6 5	4 8½	12 9½	1 3 11	1 8 8	4 9	... ...
	4 7 4	3 2 7½	6 4 3	13 14 2½	13 6 2	... ...	8 0½

Mangoes were bought outright usually at ½d. each.

Miscellaneous.

With the exception of pumpkins, all shipments under Miscellaneous, were of an experimental nature. Carrots, Beets, Lettuce, and Parsley, were shipped up to Canada, but the following remarks from Messrs. J. Hunter White Ltd. are not encouraging :—"We are rather pessimistic in regard to West Indies being able to ship Lettuce to this market. The shipment in question, while not showing any definite waste, was nevertheless wilted and we found the dealers were unable to sell it". "In regard to Parsley, there is a very limited demand for this ; Bermuda sending us more supplies than we can sell to advantage". "Loose Carrots, if they were sound and clean, are worth about $1.50 per crate. This year however, it is very difficult to make sales as in normal times, and we would not advise shipping Carrots in large quantities". "There is a demand here for Beets. These, however, must be without tops and of medium size".

TABLE VI.

Cost of Produce.	Other Local Expenses.	Freight and Agents' Charges.	Total Expenses.	Gross Sales.	Loss.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
9 13 1½	6 18 1½	14 16 0½	31 7 3½	28 5 10	3 1 5½

TABLE VII.

EXPENDITURE AND RECEIPTS, 1933.

Expenditure.		Receipts.	
1933.		1933.	
To Labour	£ 23 5 7	By Sales from abroad	£ 232 15 0
,, Purchase of Produce	116 18 8	,, Local Sales	12 1 6
,, Freight	36 14 5	,, Sales of Tomatoes, Crates and Labels	8 15 0
,, Porterage	7 6 11	,, Increase of Liabilities	65 4 10
,, Lighterage	6 6 10		
,, Making of brooms	19 9		
,, Wrapping paper	6 19 6		
,, Inspection Fee	19 5		
,, Refrigeration	2 17 10		
,, Sundries	3 6 8		
,, Decrease in Assets	113 0 9		
	£318 16 4		£318 16 4

As Freight to Canada is paid "collect", it does not appear in the above.

TABLE VIII.

ASSETS AND LIABILITIES, 1933.

Liabilities.		Assets.	
31st December 1933.		Crates	£ 11 13 10
Amount due Treasury	£ 145 6 5	Labels	40 17 6
,, ,, freight	6 2	Wrapping paper	9 6 4
Unclaimed Bonus	1 7 11	Canned fruit	1 0 10
		House brooms etc	16 6
		Jelly Bottles	1 14 8
		Amount due locally	10 0
		,, ,, abroad	15 0 7
		Cash in hand	15 5
		Excess Liabilities	65 4 10
	£ 147 0 6		£ 147 0 6

SECTION V.

REPORT ON THE WORKING OF THE GOVERNMENT COTTON GINNERY FOR PERIOD 1ST JANUARY TO 31ST DECEMBER, 1933.

Ginning and Baling.

Seed-cotton received for ginning and baling amounted to 90,617 lb. made up of 80,278 lb. white seed-cotton and 10,339 lb. stained. The total quantity received during the previous season was 399,315 lb. made up of 368,044 lb. white and 31,271 lb. stained. There was therefore a decrease of 308,698 lb. during 1933.

The lint obtained from the white Sea Island cotton amounted to 20,939 lb. and that from the stained 2,664 lb., making a total of 23,603 lb. The figures for the previous year were 100,360 lb. from white cotton and 8,236 lb. from stained, giving a total of 108,596 lb. so that there was a decrease of 84,993 lb. in 1933.

Oil Expressing.

The total quantity of seed from which oil was expressed was 448,677 lb. which included 60,819 lb. received from the Kingstown Cotton Factory, 85,870 lb. from another Ginnery, and 244,208 lb. of Marie Galante seed obtained from cotton ginned at Union Island, in the St. Vincent Southern Grenadines.

The quantity of seed from which oil was expressed during the previous year was 713,045 lb. or 264,368 lb. more than in 1933.

The quantity of oil refined was 3,435 gallons, and 987 bars soap were manufactured from the residue of the oil refining vats.

Purchase of Cotton on the Co-operative System.

The total quantity of seed-cotton purchased for the season was 64,701 lb. which consisted of 58,665 lb. of white Sea Island and 6,036 lb. of stained. The advances paid were 3 cents per lb. for white, and ¾ cents per lb. for stained, which were the same rates as those paid during the previous season. The quantity purchased during the preceding year was 230,793 lb. made up of 216,372 lb. of white and 14,421 lb. of stained. There was therefore a decrease of 166,092 lb. in the total quantity purchased.

The lint obtained was 42,444 lb. from white seed-cotton, and 1,504 lb. from the stained; making a total of 43,948 lb.

A bonus of 75% was paid on the cotton purchased during the year 1931-32.

Purchase of Corn on the Co-operative System.

40,354 lb. shelled corn and 1,677 lb. of corn on the cob were purchased on the co-operative system as compared with 51,420 lb. of shelled and 6,440 lb. on the cob during crop 1931-32. There was therefore a decrease of 11,066 lb. shelled corn and 4,763 lb. cob-corn.

The advances paid were $1.00 per 100 lb. for shelled corn and 60 cents per 100 lb. on the cob.

A bonus of 45% was paid on the 1930-31 crop in October 1933.

Other Transactions.

39,784 lb. of corn were kiln-dried, 25,026 lb. were shelled and 9,393 lb. were ground into meal or stock-feed. Grain &c., fumigated and stored in the moth-proof rooms of the Ginnery, apart from corn purchased totalled 5,922 lb. 7,295 lb. cotton seed were selected and disinfected for planting. In addition to the stained cotton seed obtained from cotton ginned at this Ginnery, 3,205 lb. received from the Kingstown Cotton Factory and 1,815 from another Ginnery were disintegrated for use as manure.

The summary of transactions for the last two years is as follows :—

	1931-32.	1932-33.
Seed-cotton received and ginned -	399,315 lb.	90,617 lb.
Cotton seed expressed -	713,045 ,,	448,677 ,,
,, ,, disintegrated -	41,009 ,,	13,001 ,,
Seed-cotton purchased -	230,793 ,,	64,701 ,,
Corn purchased -	57,860 ,,	42,031 ,,
,, kiln-dried -	53,263 ,,	39,784 ,,
,, shelled -	36,430 ,,	25,026 ,,
,, ground into meal or stock-feed	33,675 ,,	9,393 ,,
Cotton seed selected and disinfected for planting -	3,618 ,,	7,295 ,,
Grain etc., fumigated and stored	19,112 ,,	5,922 ,,
Cotton seed oil refined -	5,869 galls.	3,435 galls.
Soap manufactured -	6,567 bars.	987 bars.
Cotton seed meal delivered -	456 tons.	264 tons.